LOG OF MEETING
DIRECTORATE FOR ENGINEERING SCIENCES

SUBJECT: Underwriters Laboratories Standards Technical Panel (STP) for UL 1449, *Transient Voltage Surge Suppressors/Surge Protective Devices*

DATE OF MEETING: September 22-23, 2005

PLACE OF MEETING: NEMA Headquarters, Rosslyn, Virginia

LOG ENTRY SOURCE: Doug Lee, ESEE

DATE OF LOG ENTRY: November 7, 2005

COMMISSION ATTENDEES: Doug Lee, ESEE

NON-COMMISSION ATTENDEES:
See attached for STP attendees

SUMMARY OF MEETING:
Mr. Lee attended the STP meeting for UL 1449, *Surge Protective Devices/Transient Voltage Surge Suppressors*. The STP met to discuss comments on the proposals for the third edition of the standard. See attached Subject 1449, Summary of Topics from the meeting (without comment matrix).

The intermediate SCCR testing requirements and number of samples required for cord connected and direct plug-in devices were not addressed since UL did not report on the Market Survey progress. The STP chair indicated that he would follow-up on the program and report at the next meeting.

Subject 1449

October 24, 2005

SUMMARY OF TOPICS

The following topics were discussed at the meeting:

1) PROPOSED THIRD EDITION OF UL 1449

2) RE-STRIKE TEST

3) REALITY CHECK INITIATIVE #2 – SPD TEST PROCEDURES

COMMENTS DUE: NOVEMBER 23, 2005

A meeting of the Standards Technical Panel of UL for Surge Protectors was held on September 22 & 23, 2005 at NEMA Headquarters in Rosslyn, VA. The purpose of the meeting was to discuss items concerning the preparation of the third edition of UL 1449 for balloting.

The following report is not intended to be a verbatim transcript of the discussions at the meeting but is intended to record the significant features of those discussions.

CALL TO ORDER

Mr. Bradley Schmidt, the Chairman for STP 1449, called the meeting to order shortly after 8:00 AM. The Chairman welcomed the STP members and guests and then asked everyone to introduce themselves. The Chairman indicated that the purpose of the meeting was to 1) discuss the comments included in the UL 1449 3rd Edition comment matrix as part of Topic 1, 2) hear the reports of the UL 1449 Task Groups, 3) discuss each of the other items on the agenda, and 4) discuss any items presented under New Business, time permitting.

REPORTS FROM TASK GROUPS

The Third Edition Task Group, SCCR Testing Task Group, I^2T Task Group, Ungrounded Systems Task Group, and the Discrete Component SPDs Task Group were recognized and directed to report if needed. These reports are located towards the end of this meeting report in the section titled "STP Task Groups".

DISCUSSION OF AGENDA ITEMS

1) PROPOSED THIRD EDITION OF UL 1449

BACKGROUND

Prior to the STP 1449 meeting, UL distributed the revised UL 1449 3rd edition draft to the STP and encouraged members to submit comments. All of the comments received were included in the comment matrix and distributed to the meeting attendees prior to the meeting. Meeting attendees were asked to review the comments before the meeting.

MEETING DISCUSSION

The meeting discussion for Topic 1 centered around the comments included in the comment matrix. The Chairman informed the group that the goal for Topic 1 was to discuss the comments, determine a resolution based upon the discussions, and revise the third edition draft accordingly. The comment matrix containing the comments and the resolution from the STP meeting has been included below.

2) RE-STRIKE TEST

MEETING DISCUSSION

The STP Chairman indicated that this topic would be deferred to the next STP 1449 meeting since the STP member that submitted the topic was unable to attend the meeting. Joe and Andi conveyed Ray Hill's concern that subsequent to a surge where the MOV is destroyed (totally or partially) another surge could reignite the remaining contaminants from the initial surge and result in a hazard. Therefore, performing a combination surge at 6KV/3KA on the SPD after the abnormal overvoltage high current test would verify if a hazard exists.

3) REALITY CHECK INITIATIVE #2 – SPD TEST PROCEDURES

MEETING DISCUSSION

The STP Chairman indicated that this topic would be deferred to the next STP 1449 meeting since the STP member that submitted the topic was unable to attend the meeting.

STP TASK GROUPS

1. **Third Edition Task Group**

Objective: Using the guidance from STP 1449, develop the Third Edition of UL 1449 and prepare the Third Edition for STP review and ballot.

Names of participants: Bryan Cole, Joe DeGregoria*, Mitchell Guthrie, Andi Haa, Rudy Harford, Ray Hill, Chuck Jensen, Guy Maxwell, Tony Surtees

* Denotes Chair

The Third Edition Task Group Chairman indicated that the draft standard which was circulated prior to this meeting was updated based upon decisions made during the March 1449 meeting and subsequent comments received from the STP. It was also explained that the changes made during this meeting would be included in the draft in preparation for sending the document out for comment and balloting to the STP.

2. **SCCR Testing Task Group**

Objective: Develop a proposal, to include pass/fail criteria, of testing requirements for cord connected and direct plug in devices.

Names of participants: Bob Blanchette, Ken Brown, Steve Campolo, Andi Haa*, Dalibar Klador, Doug Lee

* Denotes Chair

The SCCR Testing Task Group report was deferred until the next STP 1449 meeting.

3. **I^2T Task Group**

Objective: Study the I^2t issue for its impact on SCCR testing methods and formulate a proposal for submittal.

Names of participants: Ken Brown, Bryan Cole*, Jonathan Cornelius, Mike Gerlach, Dalibar Klador, Bill Travis

* Denotes Chair

The I^2T Task Group report was deferred until the next STP 1449 meeting.

4. **Ungrounded Systems Task Group**

Objective: Research the use of SPDs in ungrounded systems and provide recommendations to the STP on how to disseminate the information and conclusions drawn from their research.

Names of participants: Bryan Cole, Joe DeGregoria, Andi Haa, James Funke, Chuck Jensen*, Tony Surtees

* Denotes Chair

As part of the task group work, the comment submitted under B. Cole/5 on paragraph 62 was submitted. The Ungrounded Systems Task Group completed their objective and was discharged.

5. **Discrete Component SPDs Task Group**

Objective: To develop requirements for discrete components, such as MOVs, gas tubes, etc. and to determine test parameters for discrete components that would allow for interchangeability of these components in the end use application.

Names of participants: Joe DeGregoria, Andi Haa, Corey Leavitt, Pat McCurdy, David Smith*, Bill Travis

* Denotes Chair

The Discrete Component SPDs Task Group reported.

The Task Group attempted to identify parameters to evaluate discrete components that could be used to compare MOVs for interchangeability. No specific recommendation was proposed by the task group. It was mentioned that the task group was trying to get requirements into UL 1449 to address the testing of components. It was also mentioned that discrete components are very frequently used within cord connected appliances, such as information technology equipment, UPS, audio/video products, etc., rather than in SPDs, where product surge immunity is the only concern. As such, discrete components submitted for these applications (not in SPDs) should be subjected to a surge immunity test, at 6KV/0.5KA (rather than 6KV/3KA) based on IEEE C62.41, Category C, and become part of our component requirements to be developed during the next revision cycle of UL 1449.

Some STP members indicated that similar MOV's should be interchangeable and that this is a critical issue that needs to be resolved. It was mentioned that the present requirements are not adequate to certify a component for SPD application and that the component manufacturer's data sheets should be used to determine the key parameters to define the MOV's.

As part of the task group report, the task group Chair drafted a MOV interchangeability proposal for the STP members to review. The proposal was then reviewed during the meeting and revised based upon suggestions. The following is the proposed text from the meeting outlining the criteria and tests for MOV's. The proposal will need to be formatted and revised to read as a requirement prior to including in the proposed third edition of UL 1449.

(NEW SECTION)

Interchangeability of Metal Oxide Varistors (MOVs)

The following requirements shall be applied when substituting MOVs within SPDs:

1.) Interchangeability of MOVs shall only be applicable to Type 1, Type 2, or a Type 4 SPD with integral overcurrent protection.

2.) The SPD shall be provided with a metal enclosure or a plastic enclosure that complies with flammability 5 inch (127mm) flame test in the Standard for Polymeric Materials-Use in Electrical Equipmemt Evaluations, UL 746C. A minimum 5mm spacing shall be maintained from the MOV case to the inside of the plastic enclosure. This spacing requirement may be satisfied by a barrier or partition, between the MOV and the plastic enclosure, that is a part of the SPD and provides protection from excessive heat.

3.) Replacement MOV shall have the same orientation and location as the original MOV.

4.) Replacement MOV shall comply with the requirements in this standard.

5.) Replacement MOV shall have the same MCOV as the original MOV with a maximum tolerance of + or - 2%.

6.) Replacement MOV disk diameter shall be equal to the original MOV or the geometric area shall be equal, i.e. when replacing a round MOV with a square one.

7.) Replacement MOV shall have the following test data equivalent to the original MOV:

a) Peak Surge Current

Replacement MOV shall withstand, without evidence of fire, an 8/20 single peak surge current equal to or greater than the original MOV surge current level.

b) Measured Limiting Voltage (MLV)

Replacement MOV shall be tested, at 100A, 8/20, surge current level or an equivalent (to the original MOV) surge current level and the MLV shall be equal to, but not greater than 10%, of the original MOV.

c) Dielectric Withstand

Replacement MOV shall comply with the Dielectric Withstand Test in this standard.

d) Leakage Current

Replacement MOV leakage current at rated MCOV shall be equal to the original MOV leakage current with a tolerance of + or – 10%.

As part of the interchangeability requirements, the following certification requirements were agreed upon at the meeting.

Certification Requirements

a) All test data, for the above parameters, would be submitted by the MOV manufacturer via the CTDP or testing witnessed by a UL engineer.

b) Annual Follow-up sample testing would be required, where SPD samples (with the substituted MOV) would be selected and sent to a UL office for Abnormal Overvoltage Tests at several current levels. First sample selection for testing would take place during the initial product inspection. Any failures would result in holding shipment until the problem is resolved.

NEW BUSINESS

MARKET SURVEY BRIEFING FROM UL

As part of new business, it was requested that UL report on UL's market survey program involving cord connected Surge Protective Devices that Bob Pollock spoke about during the Spring STP 1449 meeting. The STP Chair indicated that he would follow-up on the program and report back to the STP at the next meeting.

ATTENDANCE AT THE STP 1449 MEETING OF THE STP FOR SURGE PROTECTORS

STP Representatives	
Robert Blanchette*	FAA/Lockheed Martin
Matthew Caie	ERICO, Inc.
Steve Campolo*	Leviton Manufacturing Co. Inc.
Scott Choinski	National Electrical Manufacturers Association
Richard Cohen*	
Bryan Cole	Control Concepts
Joseph Degregoria	Underwriters Laboratories Inc.
Domenic DiClementi*	Naval Surface Warfare Center
Curtis Domsch	Atlantic Scientific Corporation
Rick Donohue	Wiremold
Craig Fillion*	Sears Roebuck
James Forte	Rototech Electrical Components, Inc.
James Funke	Cutler-Hammer
Michael Gerlach	Advanced Protection Technologies
John Goodsell*	Hubbell Incorporated
Mitchell Guthrie	Universal Systems, Inc.
Andrea Haa	
Jack Harford	Zero Surge Inc.
Raymond Hill*	University Laboratory Georgia Tech
Jerry Hoopes	Panamax
Chuck Jensen	Duke Power
Gary Johnson	Liebert Corporation
Robert Knapp	Byrne Electrical Specialists
Joseph Koepfinger	J.L. Koepfinger P.E. Consulting
Roy Lackey*	Advanced Electrical Solutions
Corey Leavitt	EFI Electronics Corporation
Richard LeDoux*	LeDoux's Control Systems
Benny Lee*	
Douglas Lee	U. S. Consumer Product Safety Commission
Ed Lobnitz*	Tilden Lobnitz Cooper, Inc.
Joseph Louie*	GE Trademark Licensing
Alan Manche*	Schneider Electric / Square D
Francois Martzloff*	Surges Happen!

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Patrick McCurdy	Phoenix Contact
Richard Mitchell	Ditek Company
Vladimir Rakov*	University of Florida
Dave Rowley	Transtector Systems, Inc.
David Smith	Maida Development Company
Antony Surtees	
Donald Tidey*	Littelfuse Inc.
Carl Wall*	Alabama Power Co.
Tim Wissman*	Lowell Manufacturing
John Young*	Siemens Energy & Automation
Invited Guests	
Ken Brown	Leviton Manufacturing Co. Inc.
Leonard Drewes	World Products Inc.
William Goldbach	Danaher Power Solutions
Randy Goodrich	EFI Electronics Corporation
Ron Hotchkiss	Surge Suppression Inc.
Elton Johnson	Siemens Energy & Automation
Sherif Kamel	Raycap Corporation
Dalibor Kladar	Eaton Cutler-Hammer
Andreas Koulaxouzidis	Raycap Corporation
Steve Liscinsky	Hubbell Inc.
Brian McCran	CSA International
David McDonald	Technology Research Corporation
Tom Phipps	Thor Systems Inc.
Mario Stolzenberg	Phoenix Contact
Dan Sullivan	AC Data Systems
Jim Tiesi	Control Concepts
Frank Tse	Leviton Manufacturing Co. Inc.
Frank Waterer	
Jim Wilson	AC Data Systems
UL Staff	
Warren Casper	Underwriters Laboratories Inc.
Bradley Schmidt	Underwriters Laboratories Inc.

* Not in attendance